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A ^{199}Hg Co Magnetometer System for the n2EDM Experiment

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The n2EDM experiment at the Paul Scherrer Institute searches for the electric dipole moment (EDM) of the neutron with a baseline sensitivity of ˜1×10^{-27} e·cm. Precise monitoring of the average magnetic field experienced by the neutrons is required to guard against systematic shifts on the EDM measurement that cannot be mitigated otherwise. The magnetic field monitoring is achieved using optically pumped ^{199}Hg co-magnetometers operating in the same storage volumes as the neutrons. The reduced neutron statistical uncertainty imposes a 25 fT uncertainty level on the magnetic field measured by t he co-magnetometers.
This poster presents the design, implementation, and performance of the mercury co magnetometer system.

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